September 3, 2020

Dear Agency Permit Administrators,

Electron Hydro respectfully requests an in-water work period extension that will provide for a total of 30 days construction time, preferably beginning on September 8th and ending on October 8th, 2020. This time extension is necessary to stabilize the diversion site by completing the in-water portion of Phase I, Diversion Repair, Spillway Replacement and Shoreline Protection. This amounts to a 23-day total extension beyond the current September 15th permit end date.

Completion of the in-water project as originally permitted is the most secure and appropriate way to ensure the stabilization of the riverbanks, protection and function of the fish ladder, avoidance of unanticipated river course changes and preserve the existing facilities. Completion would occur during the lowest and safest flows of the year and avoid future in-water construction. Fully functional fish passage would be maintained throughout the entire construction period.

When analyzing the minimum requirement to stabilize the diversion site, among several others, the following considerations must be made:

1) The wood diversion is 116 years old, rock filled. A little less than half diversion has been removed, so it is secured to the right abutment, and free-floating in the center of the river. There needs to be a solid abutment in the center of the river to secure the existing diversion.
2) The fish ladder will not operate unless the diversion is re-installed to 1620.33, otherwise water will not flow in it from upstream.
3) It will take weeks to place large rock fill in the riverbed to secure this area from unraveling in a flood.
4) Should we place large rocks to secure this area, it will require more time to complete next summer, requiring at least 3 months to complete.
5) Completing the center wall will secure the wood diversion on its left side (abutment).

Attached is an Electron Intake Construction Sequencing Plan (**Figure 1**) that itemizes the sequence of the completion of Phase 1. Considering the above, should construction fall behind, some of the items could be eliminated this year and completed next year. Those are the intake items 5 (partial), 7, 11, and bladder items 19 and 20 (shown on **Figure 1**). Placement of large rocks would be required, where the rubber bladder should be, to raise water level to elevation 1620. I should note there is less disturbance to tie river and environment if we complete the project this summer and not have to redo cofferdams next summer, with control and risk much lower.

The past 5-6 years have demonstrated that flows of 10,000cfs are possible and have occurred during late November through February. As demonstrated in the original application materials and engineering report, the new bladder spillway will have the capacity to contain these high flows entirely, whereas any temporary structure or non-action will result in spreading flows bank to bank, or worse, across the remaining full crest of the diversion with its inherent risk of severe damage.

Includes 5 Attachments

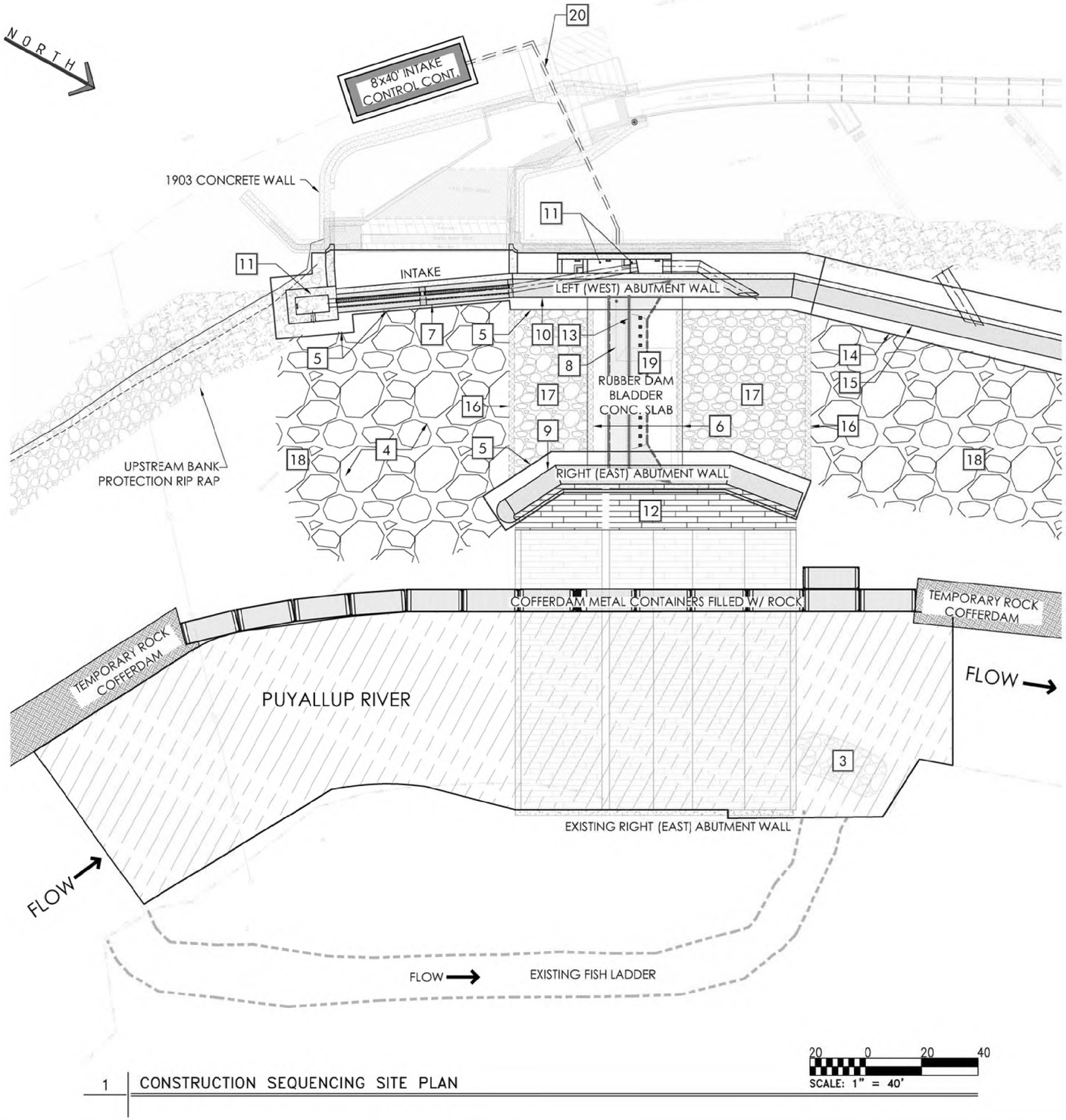
Electron has confirmed that the inflatable bladder spillway tube has arrived in Port from Europe and will be shipped to the site in the next few days. All forms, reinforcement, rebar structures, rock, steel, and related materials are on site and staged ready for install. Our crews are fully ready.

Included with this letter is a daily flow analysis through the end of October (**Figure 2**) and an engineering document supporting a cofferdam design that provides protection for up to 4000cfs (**Figures 3** and **4**). There are no significant project or cofferdam changes anticipated that would require any change to the recently approved WQMP. We will maintain onsite construction and water quality compliance monitors as previously established in the current WQMP.

With regards to removing Field Turf from the Puyallup River, crews have located all the material identified by the Puyallup Tribe and removed what they could by hand (**Figure 5**). This spreadsheet shows the status of each site. It is believed that the balance of turf could be removed with lower flows expected later this fall. To remove an unknown wire would take equipment, which could be discussed later with lower flow conditions. Crews will be walking both sides of the Puyallup River to search for crumb rubber and remove with brush and dustpan if found. This starts tomorrow. Will report of findings.

I look forward to discussion of this request, thank you for your consideration,

Thom Fischer, P.E.,
Chief Operating Officer



1 CONSTRUCTION SEQUENCING SITE PLAN

CONSTRUCTION SEQUENCING KEYNOTES

KEYNOTES ARE LISTED IN CONSTRUCTION SEQUENCING ORDER FROM NOTE 3

3 IMPROVING THE FISH LADDER PER THE FISH LADDER OPERATION AND MAINTENANCE PLAN

4 COMPLETE EXCAVATION AND DEWATERING EFFORTS PER THE MODIFIED WATER DIVERSION/RELOCATION PLAN

5 FORM AND POUR FOUNDATIONS FOR THE EAST ABUTMENT WALL THEN INTAKE AND WEST ABUTMENT WALL

6 FORM AND POUR THE TWO CENTER CUTOFF WALLS

7 FORM INTAKE WALL, PLACE AND ALIGN THE SLUICE PIPE

8 SET THE EMBED PIPES FOR THE BLADDER

9 FORM UP, PLACE EMBEDS, AND POUR THE EAST WALL

10 FORM UP, PLACE EMBEDS, AND POUR THE WEST WALL

11 FORM AND POUR THE TWO SLUICE PIPE VAULTS, AND THE MECHANICAL DRAIN EQUIPMENT VAULT

12 ONCE THE EAST ABUTMENT WALL IS POURED, CONNECT THE REMAINING EXISTING WOOD DIVERSION TO THE EAST ABUTMENT WALL

13 CONCURRENT TO THIS, FORM, PLACE EMBEDS, AND POUR SLAB BETWEEN THE TWO ABUTMENT WALLS

14 FORM AND POUR DOWNSTREAM ABUTMENT FOUNDATION

15 FORM AND POUR DOWNSTREAM ABUTMENT WALL SECTION

16 FORM AND POUR UPSTREAM AND DOWNSTREAM CUTOFF WALLS

17 POUR AND PLACE BOULDER ARMORING BETWEEN THESE TWO CUTOFF WALLS AND THE CENTER SLAB

18 PLACE LARGE RIP RAP DOWNSTREAM OF THE DOWNSTREAM OF THE LOWER CUTOFF WALL, AND UPSTREAM OF THE UPSTREAM CUTOFF WALL

19 CONCURRENT TO BUILDING CUTOFF WALLS AND BOULDER ARMORING, POSITION AND BOLT DOWN THE BLADDER ON THE CENTER SLAB

20 ONCE THE BLADDER IS IN PLACE, CONNECT THE AIR PIPING, DRAIN PIPING, AND BLOWERS BEFORE TESTING THE BLADDER OPERATIONS, TEST BLADDER OPERATIONS

NO.	DATE	REVISION	BY	CK

Electron HYDRO EST 1904

PHASE 1 CONSTRUCTION SEQUENCING SITE PLAN

SCALE PER VIEW

DESIGN: RDM
DRAWN: ESK
CHECKED: TAF
DATE: 09-03-20
JOB#:

SHEET 1 OF 20

DRAWING
S0.1

Figure 1

EH0001042

Date: September 3, 2020

To: Agency Administrators

From: Shane Cherry on behalf of Electron Hydro

Re: Electron Hydro Diversion Repair and Spillway Replacement Project
Puyallup River September and October Daily Flows Above 2,000 cfs for 1985 – 2019

Electron Hydro is developing a request for an extension of the in-water work window to facilitate stabilizing the in-water work at the Diversion Repair and Spillway Replacement Project work site. I reviewed daily flow records for the USGS Gage 12092000 "Puyallup River Near Electron, WA" to identify all days in the months of September and October from 1985 to 2019 (35 years) when daily flow exceeded 2,000 cfs. These data may be used to assess the risk of the temporary bypass channel getting overtopped by river flow. The date and daily flow values for each such event are tabulated below:

Date	Daily Flow
9/30/2013	2,250 cfs
9/30/2005	3,220 cfs
10/1/2000	2,440 cfs
10/16/1988	2,730 cfs
10/21/2003	2,280 cfs
10/22/2017	3,920 cfs
10/30/2009	2,530 cfs
10/30/1997	2,220 cfs
10/31/2015	4,000 cfs
10/31/1994	2,150 cfs

Key observations from these daily flow data are summarized below:

1. For period September 1 to October 31, daily flow exceeded 2000 cfs 10 times in 35 years.
2. Each year that occurred, it only happened on one day within the two-month period.
3. The earliest flow that exceeded 2000 cfs was on September 30 (in both 2005 and 2013).
4. The highest flow of 4,000 cfs occurred on 10/31/2015.
5. Risk is low in September but increases progressively through October with the highest probability of high flows occurring in the last 10 days of October.

These data may be used to assess flow-related risks associated with extending in-water work within this period. Keep in mind that these are average daily flow values. Instantaneous flows fluctuated over a 100 cfs range from high to low each day in late August of this year.

11063 Sparkleberry Drive • Fort Myers, FL 33913

Figure 2

These data may be used to assess the potential for river flow overtopping the temporary bypass channel. The risk of overtopping may be used to inform a decision about the timing for ending in-water work as well as any reasonable measures to mitigate the risk of overtopping including modifications to the temporary bypass channel and cofferdams to function effectively under higher flows.

If you have questions about these data, my observations, or applicability of this information please contact me at either of the numbers below.

Respectfully yours,

SHANE CHERRY
Principal Scientist
239.313.7495 (desk)
425.218.9748 (mobile)
shaneconsulting@comcast.net

cc: Thom Fischer, Electron Hydro
Chris Spens, Electron Hydro

Figure 2

Electron Intake Cofferdam Analysis

The existing cofferdam can be modified to prevent flows up to 4,000cfs from entering the construction work area. Modifying the current cofferdam profile and alignment at the upstream end and downstream end can provide this protection.

HEC-RAS 5.0.3 was used to run one-dimensional simulations. The water surface profiles for the 5,000cfs and 4,000cfs flows were overlaid on a coffer dam profile. Selecting the 5,000cfs water surface profile to determine the minimum elevation of the top of the cofferdam was used to determine if at least 1 foot of freeboard was provided over the 4,000cfs water surface profile, and it certainly was adequate.

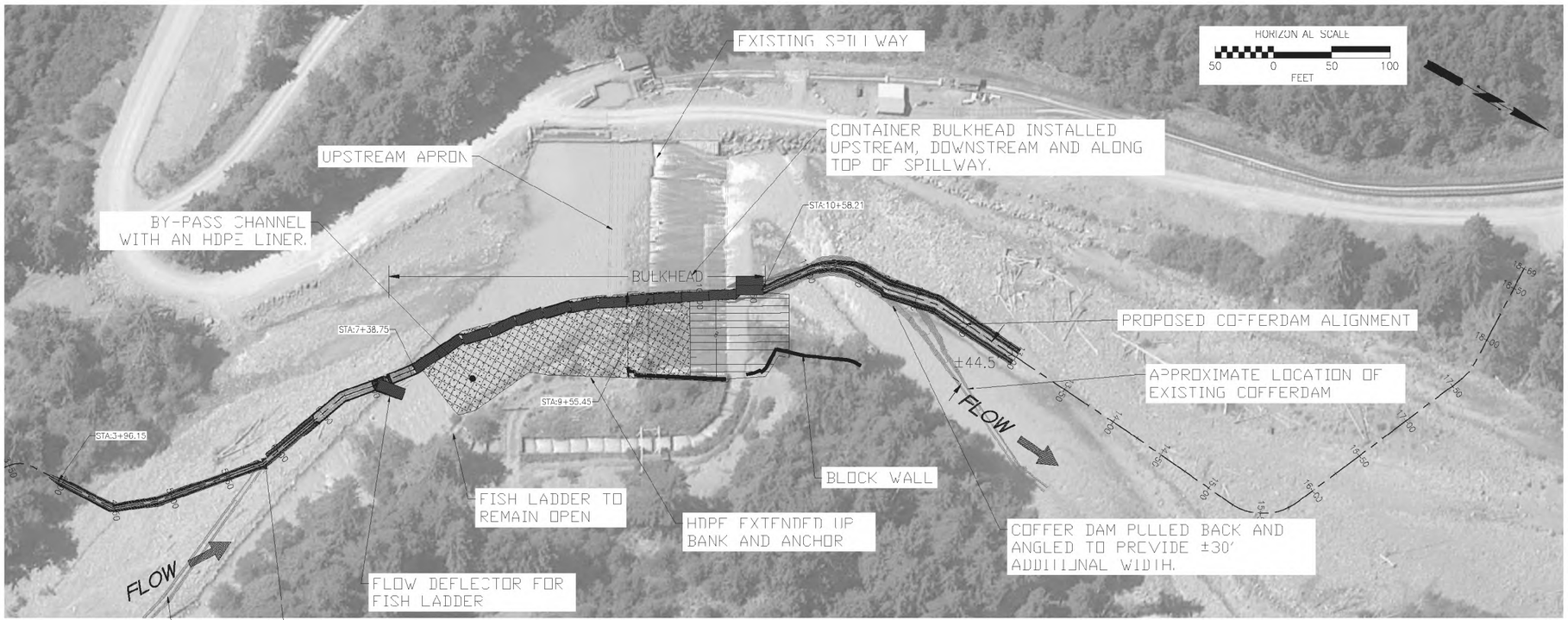
The upstream alignment starts a deflection toward the left bank shore about 600' from the start of the current cofferdam alignment. This provides more flow area reducing the velocity and ties into the left bank shore at higher elevation that will prevent flow passing behind the cofferdam.

Downstream, the cofferdam alignment was again deflected toward the left bank to provide more flow area to reduce water flow velocity.

There are draw-downs and hydraulic jumps that occur upstream and downstream from the bypass spillway. The largest jump occurs where the flow depth goes from about 4' to around 14' before leveling out. Upstream, the jump is less dramatic and occurs where a deflector has been placed opposite from the fish ladder to ensure adequate flow.

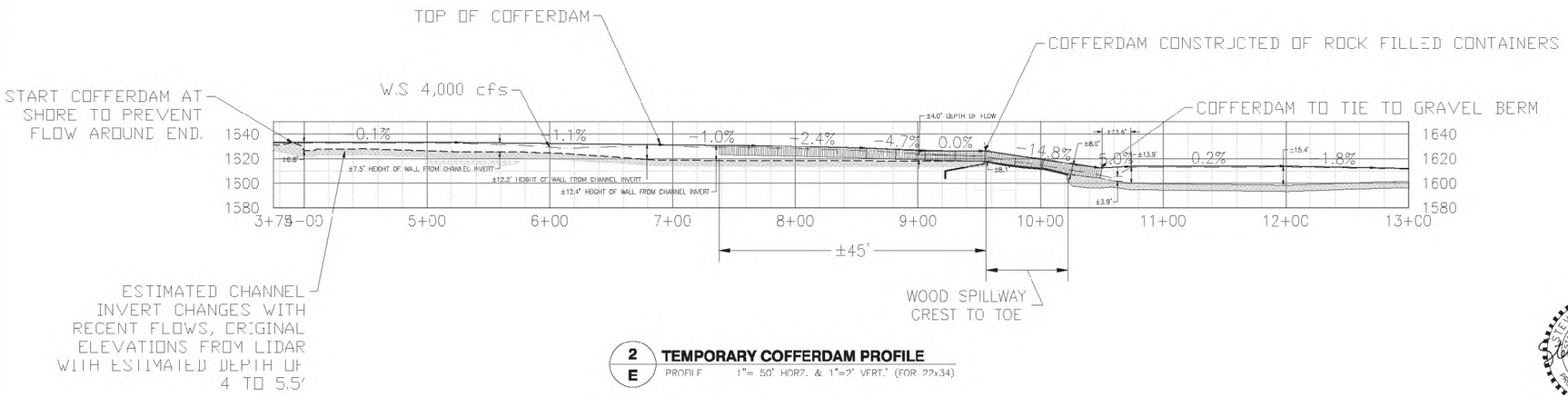
Velocities along the cofferdam range from 10-20 fps and 2-3 man rock should be placed at the toe of the cofferdam for one hundred feet downstream of the spillway and in the vicinity of the fish ladder flow deflector. Provided by: Steven P. Goodrich, P.E. WA PE-27025

Figure 3



1 / 1 TEMPORARY COFFERDAM PLAN
PLAN VIEW 1"= 50' (FOR 22x34)

VERTICAL SCALE
1 0 2 3
FEET



2 / E TEMPORARY COFFERDAM PROFILE
PROFILE 1"= 50' HORZ. & 1"=2' VERT.' (FOR 22x34)

NO.	DATE	REVISION	BY	CK
1	5/3/20	COFFERDAM W/ SECTIONS CONCEPT	SPG	
2	9/3/2020	REVISED COFFERDAM ALIGNMENT & FLOW	SPG	
3				
4				
5				
6				
7				
8				
9				

Electron HYDRO EST 1904

DIVERSION REPAIR, SPILLWAY REPLACEMENT AND BANK PROTECTION

COFFERDAM SITE PLAN AND PROFILE

PIERCE COUNTY WASHINGTON

DESIGN: TAF
DRAWN: SPG
CHECKED: TAF
DATE: 9/3/2020
JOB#: 11011900
SHEET 01 OF 1
DRAWING 01

STEVEN P. GODDARD — STATE OF WASHINGTON — 27028 REGISTERED PROFESSIONAL ENGINEER

DATE & TIME: September 3, 2020 14:23
PLOTTED BY: STEVEG

FILE NAME & LOCATION: E:\Projects\ELECTRON\DWG\Design\Intake\ILE_Intake_tempFeature_Rev2.dwg

Figure 4

EH0001046

Figure 5
Electron Turf Removal **as of: Sep 2, 2020**

Item #	River Mile	Lattitude	Longitude	Description	Update 9/2/2020 (Electron)
#1	41.6	46.908376°	-122.039250°	Black Debris caught on rocks.	Found, water level too high to safely remove
#2	41.4	46.910208°	-122.041786°	Black debris in water.	Found, water level too high to safely remove
#3	41.35	46.910592°	-122.042586°	Thin pipe, hose or similar dangling downstream from rock.	USGS stream gage equipment? Requires equipment or cut-off
#4	41.15	46.912533°	-122.045241°	Iron beam or bar imbedded in substrate of river bar.	Found, no safe way to remove without equipment
#5	40.9	46.914646°	-122.049127°	May be artificial turf hung up on rock at confluence with Niesson Cr. (note confluence and main channel differ from 2018 aerials.) RM 40.9	Found, removed
#6 (to #10)	40.85	46.915717°	-122.049689°	#6 is Black sheeting caught on log. Black sheeting and artificial turf scattered among rocks and logs of a mid-channel bar and logjam (items #6 to #10) close enough that separate lattitude/longitude were not discernable. The river splits here and the major portion of the river flows in the left channel. The overflight initially traveled down the left channel then returned to the split and followed the right channel. RM 40.8	Found, bundled up for removal at point 17
#7	40.85	46.915717°	-122.049689°	Length of black sheeting caught in rocks	Found, bundled up for removal at point 17
#8	40.85	46.915717°	-122.049689°	Artificial turf hung up on rock	Found, bundled up for removal at point 17
#9	40.85	46.915717°	-122.049689°	Artificial turf hung up on rocks near log jam.	Found, bundled up for removal at point 17
#10	40.85	46.915717°	-122.049689°	Black sheeting caught on rocks.	Found, bundled up for removal at point 17
#11 (to #16)	40.85	46.915960°	-122.050077°	#11 is Black plastic sheeting - Several debris items (#11 to #16) scattered through this channel area. Close enough that separate Lat/Lon were not discernable.	Found, bundled up for removal at point 17
#12	40.85	46.915960°	-122.050077°	Artificial turf hung up on rock	Found, bundled up for removal at point 17

Figure 5

Electron Turf Removal **as of:** **Sep 2, 2020**

#13	40.85	46.915960°	-122.050077°	Sheet or plate (possibly metal) wrapped around rock	Found, bundled up for removal at point 17
#14	40.85	46.915960°	-122.050077°	Black sheeting wrapped around rock	Found, bundled up for removal at point 17
#15	40.85	46.915960°	-122.050077°	Length of pipe, hose or line streaming downcurrent	Found, bundled up for removal at point 17
#16	40.85	46.915960°	-122.050077°	Black sheeting wrapped around rock	Found, bundled up for removal at point 17
#17 (to #21)	40.75	46.916875°	-122.051044°	#17 Black plastic caught among rocks on upstream end of a river bar with other nearby debris items (#18 to #21) where they were close enough that separate Lat/Lon were not discernable.	Found, bundled up for removal at point 17
#18	40.75	46.916875°	-122.051044°	Square reddish may be metal/iron panel	Found, bundled up for removal at point 17
#19	40.75	46.916875°	-122.051044°	Artificial turf on rock.	Found, bundled up for removal at point 17
#20	40.75	46.916875°	-122.051044°	Black sheeting hung up on small log	Found, bundled up for removal at point 17
#21	40.75	46.916875°	-122.051044°	Black sheeting hung up on rocks	Found, bundled up for removal at point 17
#21.5	40.7	46.917418°	-122.051304°	Black plastic sheeting shreds hung up on rock in main channel.	Found, bundled up for removal at point 17
#22	40.85	46.916233°	-122.049486°	#22 Artificial turf hung up on rock at upstream end of gravel bar. #22 to #24 are located in the right channel and close together.	Found, bundled up for removal at point 17
#23	40.85	46.916233°	-122.049486°	#23 Black sheeting among on gravel/rocks of gravel bar.	Found, bundled up for removal at point 17
#24	40.85	46.916297°	-122.049644°	Black sheeting hung up on gravels in small distributary of right channel.	Found, bundled up for removal at point 17
#25	40.45	46.920617°	-122.054841°	Artificial turf tangled in root wad of tree in left side of main channel. (Note main channel differs from Google Earth 7/25/2018 imagery).	Found, removed
#26	39.8	46.928488°	-122.057959°	Artificial turf caught on rocks in mid channel ahead of gravel bar.	Found, water level too high to safely remove

= Not Removed as of this date
= Removed from the River and bundled in P-105 Geoliner for removal
= Removed from OHWM

Figure 5